

PRODUCTION OF POLYHYDROXYALKANOATES FROM POLYOLS

Abstract of the Disclosure

Recombinant processes are provided whereby additional genes are introduced into *E. coli* which have been genetically engineered to produce PHA so that the improved strains produce PHA homopolymers and copolymers directly from diols. In preferred embodiments, PHAs containing 4-hydroxybutyrate monomers are produced directly from 1,4-butanediol; PHAs containing 5-hydroxyvalerate are produced from 1,5-pentanediol; PHAs containing 6-hydroxyhexanoate (6HH) are produced from 1,6-hexanediol; PHAs containing 3-hydroxypropionate are produced from 1,3-propanediol; PHAs containing 2-hydroxypropionate (lactate) are produced from 1,2-propanediol (propylene glycol); PHAs containing 2-hydroxyethanoate (glycolate) are produced from 1,2-ethanediol (ethylene glycol). Genes encoding these same enzyme activities can be introduced or their expression amplified in wild type PHA producers to improve the production of PHA homopolymers and copolymers directly from diol and other alcohol feedstocks. The PHA polymers are readily recovered and industrially useful as polymers or as starting materials for a range of chemical intermediates.